Come Together,

Come together, right now.
Companies in the midst of financial famine should waste no time in consolidating storage systems, but experts suggest they don’t stop the consolidation initiative there.

These days, IT departments wear very tight belts. According to Gartner, Inc., enterprises cut IT spending by approximately 7 percent in 2002 and will hold budgets flat in 2003. CIOs and CTOs can interpret those statistics to mean they must produce competitive results without the lush budgets they enjoyed in the late ’90s. Caught in this cash conundrum, many IT departments are rethinking their forays into distributed computing and beating a hasty retreat to the safe world of centralized IT. Many companies overwhelmed by skyrocketing IT expenditures are riding the bandwagon back to simpler times when IT departments managed fewer “things”—servers, storage servers, applications, and people.

Reconsolidation is a popular trend, especially for servers. But experts agree that consolidation should be more than a one-time project for a certain type of hardware; consolidation should be a way of life.
Less is more

Consolidation is all about simplicity, and no area has a more urgent need for simplicity than storage. After all, the world’s largest enterprises operate hundreds or thousands of servers and storage machines, and the amount of data they must process and store grows exponentially every year.

In the past, companies have attempted to solve the problem of data influx by adding more and more storage servers—often using an inefficient direct attached storage (DAS) model. DAS can create a mess of inefficiency because it entails connecting each server to its own individual storage box. In simpler terms, DAS is like carrying 10 suitcases to the airport, each only one-tenth full. It’s a complete waste of available space and leaves you tipping far too many skycaps for hauling your mountain of luggage. (Then consider how much you paid for nine unnecessary suitcases.)

The storage snag is similar: More machines require more people and more time to manage them—an expensive proposition for any enterprise watching its waistline. That’s why savvy CIOs turn to storage consolidation.

Saving grace

Although consolidation is surrounded by a lot of hype, the practice has earned a good reputation. It holds the potential to reduce costs in several areas of the IT department.

First, enterprises can save money by consolidating many underutilized storage devices into fewer appliances. Over the lifetime of a consolidated storage system, many companies will realize a lower total cost of ownership (TCO) on storage hardware.

Storage consolidation also helps companies to leverage their current investments because it creates a common storage pool accessible to every platform used by an enterprise. Literally hundreds of heterogeneous servers can simultaneously share the capacity of one or more storage subsystems.

A single centralized management interface for the storage pool enables each storage administrator to manage many times more capacity than is possible in a DAS environment. Therefore, consolidation can help enterprises reduce staff size, not in a dreaded “pink slip” way, but in a way that lets companies reallocate employees to activities that are more profitable than operations and support. A large tech company, for example, could increase business agility by redeploying staff to research and development tasks aimed at putting the company ahead of the competition.

As software requirements and business needs change, consolidated storage systems allow companies to transfer excess storage capacity where they need it most. Because capacity can be allocated to specific servers on an as-needed basis, storage consolidation architectures can achieve greater capacity utilization compared to the amount of utilization commonly achieved in DAS environments. Plus, consolidated storage systems enable companies to implement a standardized data backup process that reduces the risk of lost or mismanaged data. This standardized backup procedure provides valuable disaster recovery capabilities, ensuring that crucial data will not go missing in the event of a catastrophe.

Finally, fewer storage machines consume less floor space and electricity—helping to decrease the number of necessary data centers and taking a healthy bite out of the power bill.

Another interesting outcome of many consolidation projects is that many organizations generate additional revenue. How? If
a company is more efficient, can scale for greater capacity, and can provide an improved user experience, then it could process more transactions at a lower cost, pass on lower costs to its customers, and increase its customer base—all leading to increased revenue.¹

A tale of two technologies

Storage consolidation typically takes two forms: the storage area network (SAN) and network attached storage (NAS). In the long term, NAS and SAN will likely converge, or at the least be less differentiated. In fact, Gartner forecasts that by 2006, 70 percent of the worldwide factory revenue for disk storage systems will be fabric attached storage (FAS).² SAN and NAS both provide enterprises with storage systems that are eventually cheaper, more scalable, and easier to manage than DAS. But digging into the details reveals that SAN and NAS are quite different and are suitable for different kinds of consolidation projects.

NAS devices can take the place of network file servers, doling out files to multiple users simultaneously. A NAS system is relatively inexpensive and easy to install and configure. This model is basically a DAS replacement that is more efficient and easier to manage. However, NAS isn’t as scalable as some companies might like it to be, so it’s not the right type of storage in all parts of the enterprise.

The goal of a SAN is to offload data from the communications network in enterprises with very large storage requirements. Using a Fibre Channel interconnect that allows servers and storage to be located many miles apart, SANs allow enterprises to centrally manage storage that is physically distributed across wide geographies. Enterprises can configure SANs to be infinitely scalable, highly redundant, and fault tolerant.

A NAS implementation is a fairly low-risk project, while the SAN model is a more sophisticated setup that requires more up-front effort for a big payback later. But they’re not mutually exclusive; in fact, some companies discover that they need both.

The Bombay Company, which designs and sells home accessories and furniture through specialty catalogs, the Internet, and 422 retail outlets, recently installed a Dell|EMC SAN. To better manage corporate data while accommodating future growth, Bombay also integrated a Dell™ PowerVault™ 755 NAS server into the SAN. “Integrating NAS on SAN into our storage strategy gives us a central repository for all data and allows us the flexibility to grow as needed in the future,” says Chris Carroll, director of infrastructure at Bombay. Carroll says he expects the SAN will help increase the availability and performance of applications such as Microsoft® Exchange and Microsoft SQL Server. “We anticipate that moving our storage from the local area network to the SAN will reduce traffic on the network.

### Potential benefits of consolidated storage

<table>
<thead>
<tr>
<th>DAS</th>
<th>vs.</th>
<th>Consolidated Storage</th>
<th>Potential benefits of Consolidated Storage</th>
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</thead>
<tbody>
<tr>
<td>• Higher price per MB of stored data</td>
<td>$• Lower price per MB of stored data</td>
<td>• Cost savings</td>
<td></td>
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<tr>
<td>• Many points of failure</td>
<td>$• No single point of failure</td>
<td>• Increased uptime</td>
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<tr>
<td>• Lower disk utilization</td>
<td>$• Higher disk utilization</td>
<td>• Fewer disks necessary, reduced costs</td>
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</tr>
<tr>
<td>• Each unit must be managed individually</td>
<td>$• Supports network-wide storage management</td>
<td>• Simplified management, greater control</td>
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<tr>
<td>• Each unit must be shut down to add capacity</td>
<td>$• Scales to meet increased needs without interrupting operations</td>
<td>• Enhanced scalability and availability</td>
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<tr>
<td>• Each unit is limited to a specific OS</td>
<td>$• Works in heterogeneous environments</td>
<td>• Increased flexibility</td>
<td></td>
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<tr>
<td>• Tape drive for every DAS unit</td>
<td>$• Shared tape drives</td>
<td>• Reduces number of tape drives needed</td>
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</table>
More than one-third of consolidation projects over the next five years will experience major setbacks because of poor planning.¹

When it comes to preventing those roadblocks, a little knowledge goes a long way.

☐ Clearly define and enforce standards.

☐ Designate a project leader or advocate.

☐ Obtain buy-in from every business unit.

☐ Work with a leading vendor.

☐ Hire a skilled IT staff.

☐ Explore application interoperability.

☐ Set reasonable expectations.

improve the performance of key applications, and decrease the time required to back up our critical corporate data.”

A solid game plan

Companies considering storage consolidation should enlist an experienced vendor to help determine the best plan of action. Using the Storage Consolidation ROI Analyst Tool, Dell helps consolidation candidates estimate the financial benefits and costs of consolidation. Then, through the Infrastructure Consolidation Readiness Assessment program, Dell experts work with customers to outline the challenges they might face and devise strategies to overcome potential problems before they arise. Finally, the Dell|EMC and PowerVault family of products offer storage equipment—plus comprehensive service and support—to match any company’s unique needs.

As companies await an economic turnaround, many have learned that cost-cutting measures such as consolidation might be the best way to stop flirting with financial disaster. Regardless of which consolidation project an enterprise tackles first, experts suggest that execs apply a consolidation philosophy to all parts of the enterprise, including hardware, software, applications, and physical data centers. After all, the primary aim of consolidation is to reduce costs and complexity—a rule of thumb that nearly any part of the enterprise should take to heart. ☐

Sources


